(19) World Intellectual Property **Organization**

International Bureau



(43) International Publication Date 16 June 2005 (16.06.2005)

PCT

(10) International Publication Number WO 2005/053824 A3

(51) International Patent Classification7:

B01D 65/08

(21) International Application Number:

PCT/IL2004/001110

(22) International Filing Date: 7 December 2004 (07.12.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

7 December 2003 (07.12.2003) US 60/529,668 60/621,014 22 October 2004 (22.10.2004)

- (71) Applicant (for all designated States except US): BEN-GU-RION UNIVERSITY OF THE NEGEV RESEARCH AND DEVELOPMENT AUTHORITY [IL/IL]; P.O.Box 653, 84152 Beer-Sheva (IL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): GILRON, Jack [IL/IL]; Harevava 2, 84225 Beer-Sheva (IL). KORIN, Eliyahu [IL/IL]; Moshe Yithak 9, Ramot, Beer-Sheva, 84832 (IL).
- (74) Agents: Pyernik Rutman et al.; Beit Etzion, 91 Herzl St., P.O.Box 10012, 84106 Beer-Sheva (IL).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

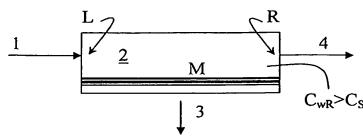
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 7 July 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND SYSTEM FOR INCREASING RECOVERY AND PREVENTING PRECIPITATION FOULING IN PRESSURE-DRIVEN MEMBRANE PROCESSES



thus preventing precipitation of the salts and minerals.

 $C_{wR} > C_S$

(57) Abstract: A process is provided for purifying water containing soluble species capable of forming one or more sparingly soluble salts or minerals, comprising feeding a pressurized water stream into a treatment zone (2) having one or more membranes (M), passing the stream along the membranes (M) to recover permeate (4) and concentrate (3), while periodically reversing the flow direction at periods of time to prevent exposing the membranes (M) to supersaturation condition,

WO 2005/053824